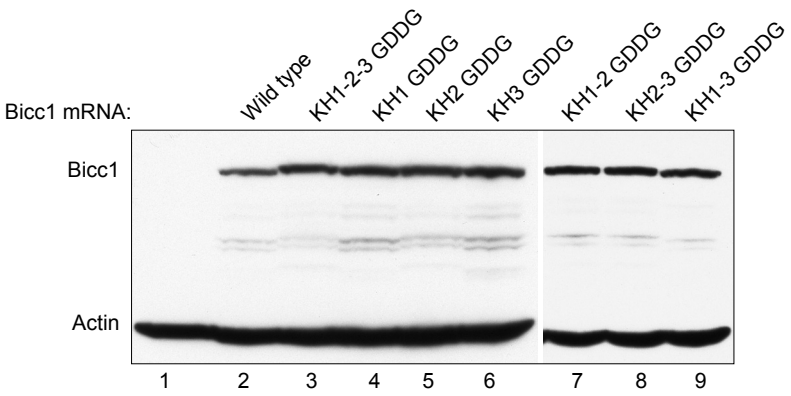

Figure. S1. **Expression of Bicc1 protein variants**.

The Bicc1 protein variants containing GDDG substitutions were expressed in *Xenopus* embryos and analyzed for binding to endogenous mRNAs (see **Fig.3**). Immunoblot analysis with an anti-HA antibody was used to monitor the expression of the different protein variants used in RNA binding assays. The blot was probed with an antibody to cytoskeletal actin to serve as a control.

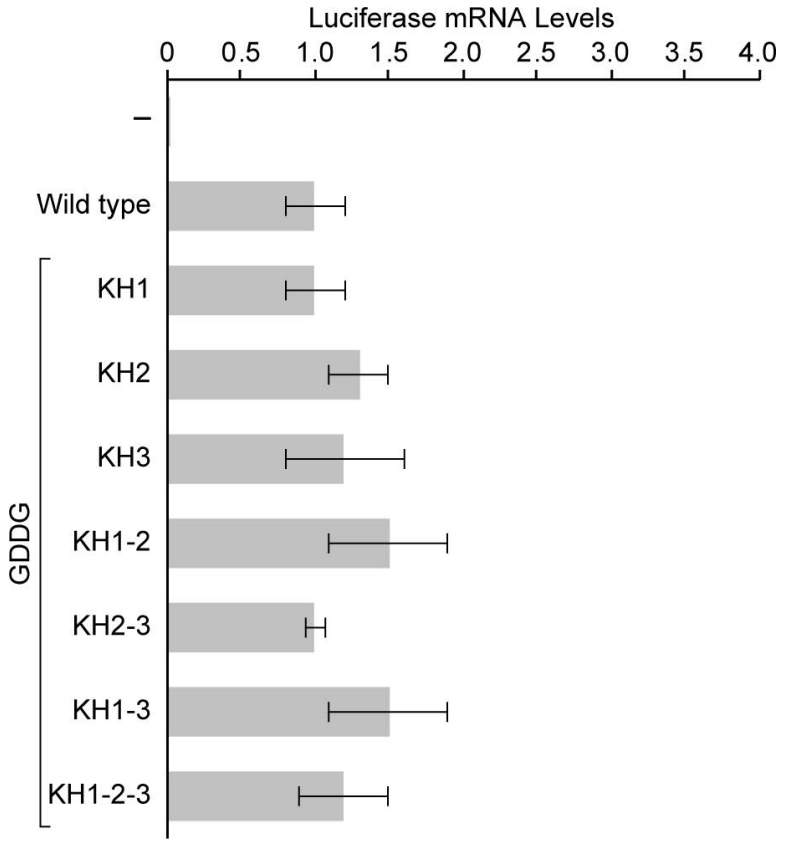

Figure. S2. Reporter mRNA stability. RT-PCR was used to quantitate the luciferase-Cripto mRNA (Luc-Cripto1) used to analyze Bicc1 variants for translational repression. *Error bars* represent the standard error from three separate experiments. One-Way ANOVA indicated that the levels of reporter mRNAs in embryos following injection were not significantly different.

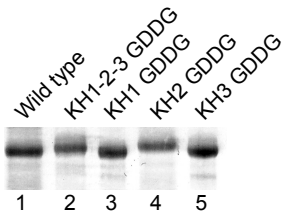

Figure. S3. Bicc1 protein variants used for RNA binding assays. The different Bicc1 protein variants (aa 1-506) purified from *E.coli* and used for RNA binding assays were analyzed by SDS polyacrylamide gel electrophoresis.

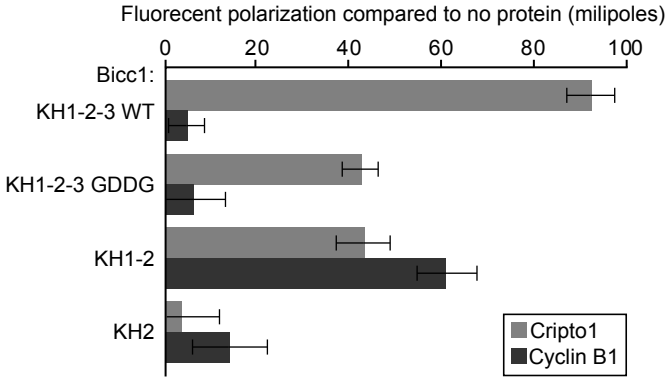

Figure. S4. RNA binding of wild-type and variant Bicc1 proteins by fluorescence polarization. RNA binding assays were assembled using different Bicc1 proteins and either the fluorescently labeled Cripto1 RNA or the negative control cyclinB1 RNA. The protein variants were Bicc1 wild-type N-terminus KH1-2-3 WT (aa 1-506), the KH1-2-3 GDDG protein (aa 1-506), KH1-2 protein (aa 41-201) and KH2 protein (aa 126 – 201). The binding of proteins to the RNAs was analyzed using a fluorescent plate reader and values were plotted in comparison to control reactions containing no protein.

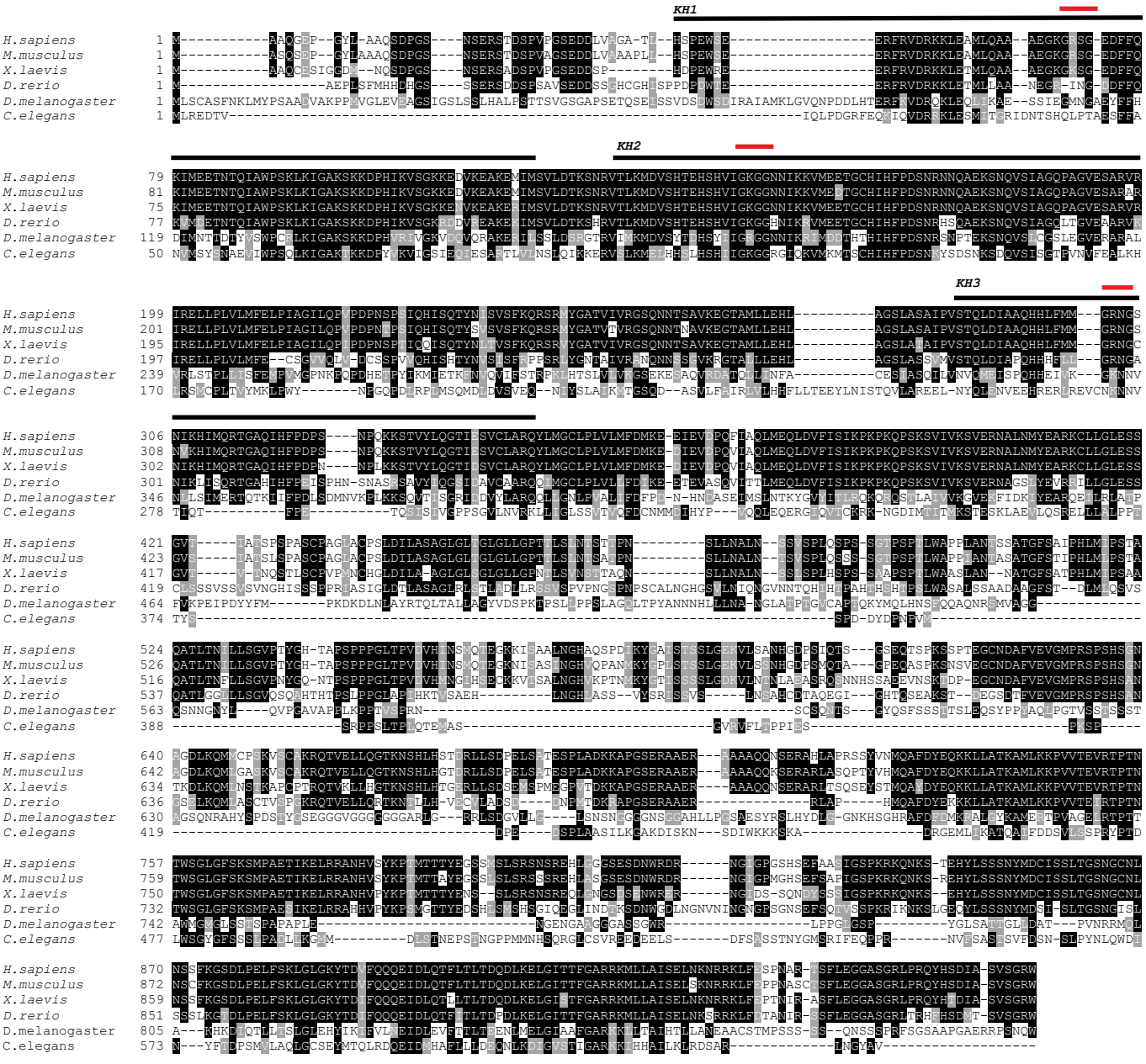

Figure. S5. The evolutionarily conserved features of Bicc1 proteins. Amino acid sequences from vertebrate and invertebrate Bicc1 proteins were analyzed with Clustal Omega. Residues identical to human Bicc1 are highlighted in black, while similar residues are highlighted in grey. Each of the KH domains and the associated GXXG motifs are indicated.

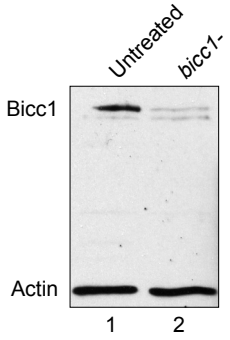

Figure. S6. Antisense oligos block accumulation of the Bicc1 protein during oocyte maturation. Oocytes were injected with the 9463 oligonucleotide and incubated for two hours. The injected oocytes were matured overnight with progesterone then the proteins analyzed by immunoblotting and probing with the Bicc1 antibody.